

ABSTRACT

A magneto-striction based, passive optical current sensor is provided that is located at high voltage and communicates to ground level via an optical fiber. The optical current sensor includes a ferromagnetic core, a modulator of magnetostrictive material, e.g. Terfenol-D in a preferred embodiment, that responds to the magnetic field, and two or more matched fiber Bragg gratings that convert this response into a wavelength modulated optical signal that is transmitted via an optical fiber to ground level electronics. To linearize the output of the optical current sensor, the optical sensor includes arrangements to provide both mechanical and magnetic bias to the modulator.